



Fundamental Ag Mechanical Technologies

Career Cluster	AFNR
Course Code	18401
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	.5 or 1.0
Graduation Requirement	No
Program of Study and Sequence	Cluster Course – Fundamental Ag Mechanical Technologies – Ag Systems Technology or Ag Metal Fabrication
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurships, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (Construction Industry or General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	
Teacher Certification	Agriculture Education
Resources	

Course Description:

Fundamental Ag Mechanical Technologies is offered to help students build basic knowledge and skills in the area of agricultural mechanics, along with soft skills necessary for careers in the Agriculture, Food and Natural Resources sector. Topics covered in this course include: electricity, engines and ag technology. More substantial knowledge on the individual topics comes in advanced courses such as Ag Systems Technology, Ag Metal Fabrication, and Fundamental Ag Structures. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Algebra, geometry, English and human relation skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises and field trips. This class is reinforced through the FFA and Supervised Agricultural Experience (SAE) programs, the Ag Mechanics Career Development Event, and related Proficiency Experience or Internship Project. Each student will be expected to maintain a SAE.

Program of Study Application

Fundamental Ag Mechanical Technologies is a first pathway course in the Agriculture, Food and Natural Resources Program of Study, Power Systems pathway. Fundamental Ag Mechanical Technologies is preceded by a Cluster course and is recommended to be taken prior to participation in Ag Systems Technology or Ag Metal Fabrication.

Course Standards

FAM 1 – Apply safety practices in mechanical applications.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Skill/Concept	FAM 1.1 – Explain the safe operation and servicing of machinery and equipment.	Be sure to include welding and electrical safety
Three Strategic Thinking	FAM 1.2 – Demonstrate safe operation of construction/fabrication tools.	

Notes

FAM 2 – Identify maintenance procedures & schedules for mechanical equipment, power and agricultural technology.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Skill/Concept	FAM 2.1 Identify parts and explain functions of various mechanical systems.	Internal combustion engines Hydraulic systems Pneumatic systems
Two Skill/Concept	FAM 2.2 – Investigate common maintenance schedules and practices for equipment.	Manuals, online searching for maintenance schedules
Three Strategic Thinking	FAM 2.3 – Troubleshoot problems in mechanical systems.	

Notes

FAM 3 – Demonstrate basic skills in project planning and metal fabrication.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Three Strategic Thinking	FAM 3.1 – Create sketches of metal projects.	
Two Skill/Concept	FAM 3.2 – Demonstrate basic welding principles and techniques.	Metal Inert Gas (MIG), Shielded Metal Arc Welding (SMAW), Oxy-fuel cutting, Tungsten Inert Gas (TIG)
Three Strategic Thinking	FAM 3.3 – Employ metal fabrication principles to create a metal project.	

Notes

FAM 4 – Apply electrical principles in agricultural applications.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
One Recall	FAM 4.1 – Recognize the components and functions of electrical systems.	
Three Strategic Thinking	FAM 4.2 – Demonstrate fundamental principles of electricity.	

Notes

FAM 5 – Investigate emerging agricultural technologies.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Skill/Concept	FAM 5.1– Investigate new and/or existing technology in agriculture.	Global Positioning System (GPS), Geographic Information System (GIS), drones, robotics, etc.

Notes

FAM 6 – Develop employability skills related to the Power, Structural, and Technical Systems Pathway.

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Two Skill/Concept	FAM 6.1– Develop soft skills to enhance employability.	

Notes